

Headed for Injury

An Observational Survey of Helmet
Use Among Children Ages 5 to 14
Participating in Wheeled Sports

May 2004



INTRODUCTION

Bikes are a classic symbol of childhood recreation, transportation and health. It is estimated that more than 70 percent of children ages 5 to 14 (27.7 million) ride bicycles.¹ Also, child participation in other wheel-based sports, such as skateboarding and inline skating, has grown exponentially over the past decade. At the same time, competitive wheeled sports have evolved and skateparks have appeared in communities across the country. Participation in wheeled sports helps children develop the habit of healthy physical activity, and also contributes to a sense of independence and responsibility.

Unfortunately, bicycles are associated with more childhood injuries than any other consumer product except the automobile.² In 2001, 134 children ages 14 and under died³ and nearly 314,600 were injured in bicycle crashes. Additionally, more than 176,000 children ages 5 to 14 are treated each year in hospital emergency rooms for injuries related to skateboards, scooters and skates.⁴

Head injury is the leading cause of wheeled sports-related death and the most important determinant of permanent disability after a crash.^{5,6} Head injuries account for more than 60 percent of bicycle-related deaths, more than two-thirds of bicycle-related hospital admissions and about one-third of hospital emergency room visits for bicycling injuries.⁷ Without proper protection, a fall of as little as two feet can result in a skull fracture or other traumatic brain injury.

Helmets can avert the serious consequences of a seemingly typical childhood incident such as falling from a bike. When worn correctly and consistently, helmets are very effective at reducing the risk of bicycle-related death and injury and the severity of head injury when a crash occurs. Helmets have been shown to reduce the risk of head injury by as much as 85 percent and the risk of brain injury by as much as 88 percent.⁸

The accuracy of recent national estimates of helmet use may be limited by the use of parental reports of child behavior via telephone surveys. Studies have found that parental perceptions may not accurately portray patterns of helmet use because children often participate in wheel-based activities while out of their parents' sight.⁹ Some published reports of helmet use among children, such as those in Texas, New York and the Pacific Northwest, have utilized more rigorous observational survey methods.^{10,11,12} However most observational studies have been limited by small sample sizes, geographical limitations to certain states or localities, or observations of helmet use by children on bicycles only.

The SAFE KIDS objective in conducting this study was to determine through direct observation the level of helmet use among children ages 14 and under participating in a variety of wheel-based activities (e.g., biking, inline skating, scootering) and to examine differences in usage by variables such as age, gender, location and the presence of laws or regulations requiring helmet use.



METHODOLOGY

In the autumn of 2003, SAFE KIDS coalition representatives collected data from a sample of 8,159 children and 1,396 adults at 549 sites in 46 states and the District of Columbia. Coalitions identified the observation sites by surveying communities to learn about places where children often engage in wheeled sports and the peak times at which ridership could be observed.¹³ Common observation sites included schools, parks, playgrounds, bike paths and residential streets.

SAFE KIDS' observers received training materials outlining the study's methods and instructions for data collection. The training materials also included a pictorial exercise for practicing the estimation of age and sex through observation. Data were recorded using TELEforms and protocols developed by the National SAFE KIDS Campaign with advice from its expert advisory panel.

Each site was observed one time for 45 minutes between the months of September and December 2003. Riders eligible for observation were children who appeared to be between the ages of 5 and 14 years and adult riders accompanying them. Activity, apparent gender and estimated age were recorded for each rider, along with information on helmet use and gross misuse.

Data were submitted to the SAFE KIDS national office for entry and analysis. Chi-square tests to determine the significance of crude associations between helmet use and predictor variables were conducted using SPSS version 12.0. All crude associations highlighted in this report were found to be significant at the $\alpha = 0.01$ level.

It is estimated that more than 70 percent of children ages 5 to 14 (27.7 million) ride bicycles.



RESULTS

Overall, 41 percent (3,315) of children and 39 percent (544) of adults observed were wearing a helmet while participating in wheeled sports. However, more than a third (35 percent) of child riders who wore helmets wore them improperly, with helmets tilted or straps unsecured.

Female children were more likely to wear helmets (45 percent) than males (33 percent). Younger children were also more likely to be wearing helmets — 51 percent of children ages 5 to 9 wore them, compared to 35 percent of children ages 10 to 14.

Helmet use varied somewhat by activity. Similar rates of helmet use were found among bikers (42 percent), skateboarders (40 percent) and skaters (42 percent). Helmet use was significantly lower among children on scooters, 30 percent.

Riders on bike paths (50 percent) and in parks or playgrounds (42 percent), where children often ride for recreation, had the highest use rates. Use was lower at sites where wheels are often used for transportation — schools (38 percent) and residential streets (33 percent). Sites with policies regulating helmet use had a higher rate of use, 52 percent, compared to 38 percent at sites with no regulations.

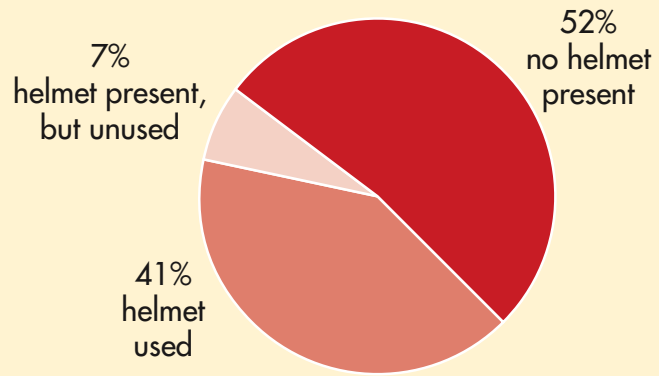
Helmet use was significantly higher at sites where there was adult supervision (47 percent) than at sites with no supervision (37 percent). Helmet use by adult companions was also associated with increased use by the children in their company. When all adult riders with them wore helmets, 67 percent of children wore helmets. This is in contrast to the 50 percent of children wearing helmets while accompanied by non-helmeted adults.

Child bikers observed in locations with statewide laws requiring helmet use were more likely to wear helmets (45 percent) than those in states without laws (39 percent).

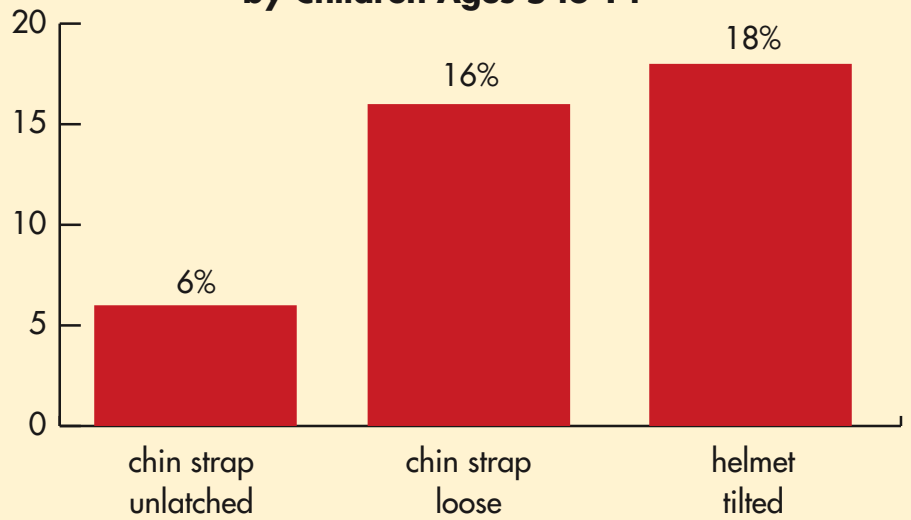




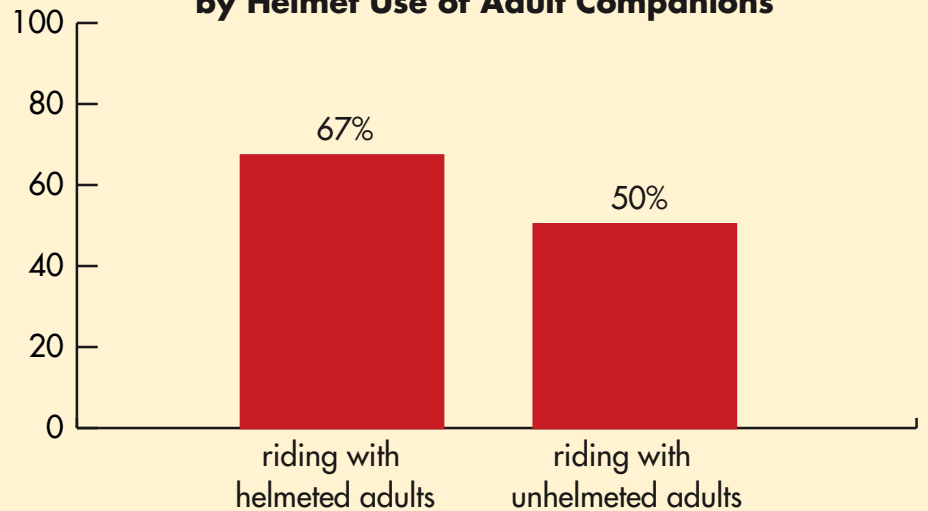
Helmet Use by Children Ages 5 to 14



Incorrect Helmet Use by Children Ages 5 to 14



Helmet Use of Children Ages 5 to 14 by Helmet Use of Adult Companions



DISCUSSION

These findings, while not statistically representative of all children in the United States, represent helmet use observed at a broad variety of sites in communities across the country. The 41 percent use rate found in this survey is higher than published estimates of smaller-scale observational surveys.^{14,15} The inclusion of many sites frequented by avid, rather than occasional, participants in wheel-based sports and the cooler temperatures of autumn may have resulted in a higher than expected use estimate, especially because heat is often cited as a reason for helmet nonuse.¹⁶ Also, many of the observational sites have been targeted by SAFE KIDS coalitions for helmet safety education in the past, which may also have resulted in a higher use rate.

More than a third of children wearing helmets had at least one observable misuse. Correct fit and proper positioning are essential to ensuring the effectiveness of bike helmets and reducing injury. One study found that children whose helmets fit poorly are at twice the risk of head injury in a crash compared with children whose helmet fit is excellent. In addition, children who wear their helmets tipped back on their heads have a 52 percent greater risk of head injury than those who wear their helmets centered on their heads.¹⁷

The existence of a state-level law requiring helmet use seems to have had a modest effect on helmet use rates in this study. Currently, only 19 states and the District of Columbia have enacted some form of helmet legislation, most of which covers only young riders (under age 15). Numerous studies have shown that helmet laws are effective at increasing helmet use and reducing bicycle-related death and injury among children covered under the law.^{18,19,20} A study in New Jersey found that, in the five years following the passage of the state-level mandatory bicycle helmet law for children ages 13 and under, bicycle-related fatalities decreased by 60 percent.²¹ Rigorous police enforcement also increases the effectiveness of these laws.²² While our findings suggest slightly higher use in states with laws, our analysis cannot control for the influence of local ordinances, differing levels of enforcement and previous helmet safety education.

In a 1994 survey, helmet use among children ages 5 to 14 was estimated at 25 percent.²³ Our findings suggest that some progress has been made in the past decade. More children, especially those ages 5 to 9, are wearing helmets while participating in wheeled sports. This survey confirms that parents and caregivers have a significant effect on the helmet use of children, both as supervisors and as positive role models. Future efforts to improve the rate of helmet use among children should also focus on parents and caregivers, to ensure that all riders wear helmets properly on every ride.

*The National
SAFE KIDS
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CALL TO ACTION

Children's reasons for not using helmets are varied. According to a national survey, they range from "I only ride near home" to "Helmets are uncomfortable" to "I don't feel cool wearing a helmet."²⁴ Because the consequences of not using a helmet can be severe, the National SAFE KIDS Campaign calls upon safety advocates and other concerned adults to join its more than 600 coalitions and chapters in efforts to increase the proper use of helmets by children participating in wheel-related activities. Specifically:

- Educate children and their caregivers about the importance of properly wearing a helmet that bears a CPSC label, certifying that it meets or exceeds the safety standards developed by the U.S. Consumer Product Safety Commission. Adults should be role models by wearing helmets properly on every ride;
- Enact helmet legislation in every state and expand current helmet laws to cover children participating in all wheel-related activities;
- Improve enforcement of helmet laws;
- Strengthen helmet safety educational and awareness initiatives;
- Encourage recreational sites to set and post regulations mandating helmet use;
- Evaluate existing strategies for increasing helmet use among participants in wheel-related sports to ensure scarce resources are spent wisely on effective programs;
- Support programs that distribute helmets and other safety gear at low or no cost to families in need; and
- Advocate for wheel-related sports-friendly communities with features like bike lanes and paths and environmental modifications to slow down vehicle traffic.

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ENDNOTES

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